

THE HABITS OF THE COMMON EARWIG OF
ANNAMALAINAGAR, *EUBORELLIA STALI* (DOHRN).

BY

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To collect material for studying the development of the common South Indian Earwig, I have kept under observation for the past six months a large number of living specimens collected mostly from Annamalainagar and to a small extent from Tanjore and Coimbatore. The observations I have made so far are embodied in this note. Observations on the Indian *Dermaptera* were made by Dr. Annandale (1),¹ M. Burr (2), and Morgan Hebard (3). My observations, as shown below, differ from theirs in certain respects.

In my laboratory the earwigs were placed in slightly moist humus in wide-mouthed jars. They were periodically fed on earthworms, petals of *Hibiscus rosa sinensis*, garden snails, etc.

The natural haunt of *Euborellia stali* (Dohrn) is under stones, dead leaves, and in almost all places in the soil where a certain amount of moisture is present. Like all other earwigs, they burrow in the soil. The insects are nocturnal in habit and do not emerge by day-light. They are not attracted by light. They are alert active creatures, running away, when disturbed, holding their forceps widely opened.

The forceps of earwigs are weapons of offence and defence. Dr. Annandale with reference to *Labidura riparia* Pall., var. *inermis*, Br., remarked as follows:—

'I have never seen an earwig nip another, nor I have been able to induce one to nip my finger' (1). But I find that not only does this earwig protect itself with its forceps but it can inflict severe wounds with them. Gadeau de Kerville has shown that the forceps are used as weapons of offence and defence and he has recorded a number of interesting notes on the function of the forceps of the earwigs. 'Gadeau de Kerville was nipped by . . . *Forficula auricularia* so strongly that blood was drawn, and Commander J. J. Walker had the same experience in New South Wales with the largest known earwig *Anisolabis colossea*' (2).

Euborellia stali is a small species and is not able to pierce tough skin, but nevertheless when caught it tries to extricate itself, by using its forceps.

Though chiefly carnivorous these earwigs feed freely on vegetable matter. They eat the petals of *Hibiscus rosa sinensis*, of *Thespesia*, and of the rose, also rotten oranges, tomatoes, plantains, etc. They also eat killed garden snails, small soft-bodied insects, dead grass-

¹ Numbers in thick type within brackets refer to the serial numbers of the various publications listed in the bibliography at the end of the paper.

hoppers, dead prawns, earthworms, mutton, eggs of small creatures, etc. Mr. B. Burr fed *Labidura riparia* on blue-bottle flies. They sucked them dry and left the empty skin (2). Dr. Annandale noticed that *Labidura riparia*, sometimes carries its prey on its forceps (1). I find the forceps are really very useful implements for catching the food and conveying it to the mouth. The earwig attacks and seizes its prey with its forceps and then bending its body to one side, transfers it to its mouth.

When these earwigs are placed in large numbers in a single jar they become cannibalistic, the stronger ones eating the weaker. The young are very active and move more quickly than the adults. Green found that *Elauman bipartitus* (Kirby) 'when handled gave off a pungent odour like that of the Bombardier beetle' (2). The species with which this note is concerned did not exhibit the same character.

The sexes can be distinguished to a certain extent by their size, the shape of the forceps, and the number of segments. Males are smaller in size, and their forceps are more curved than those of the female. The straight and unnotched or entire forceps of the female are heavier in build and stronger than those of the male. There are only 6 abdominal segments in the female while in the male there are 8.

Euborellia stali is neither a household nor a garden pest.

Breeding habits.—To study their breeding habits the earwigs were sorted out in pairs, and placed in separate jars. In mating the male usually backs up to the female and touches her forceps. The female in her turn expands her forceps and comes closer to the male. The male then twists its tail portion and effects a connection tail to tail. In the act of copulation the ventral side of the male is opposed to the ventral side of the female. Copulation usually lasts for about 15 minutes. The female, being stronger, sometimes drags her partner.

My observations in these respects conform to those of de Geer, Lesne, de Bormans and Gadeau de Kerville (2).

Oviposition.—I have collected eggs of *Euborellia stali* in the months of November, December, January, February, March, April, June, July and August (i.e., practically all through the year). The female takes about 20 hours to lay the full complement of eggs which are usually about 35 in number, ovoid in shape, white in colour, and small in size. Milton observed 48 eggs laid by a female earwig (4). Some species, as several observers have recorded, are known to lay as many as 90 eggs at a time (2).

Maternal care.—The female earwig sits over her eggs, and guards them. The male never approaches the brooding female. If the eggs are separated from the mother they are not found to hatch. Mr. and Mrs. Milton observed the same thing in their study (4). If disturbed when brooding, the mother takes the eggs one by one in its mandibles and removes them to a safe corner. She cleans them every now and then with her mouth; and, if seriously disturbed, she eats them. If, for instance, the cluster of eggs is scattered, the mother makes no attempt to collect them, but responds by eating them. de Geer in the case of the species

observed by him found that the mother picked up all the eggs when scattered in the different parts of the sand-box (2).

Incubation takes about eight days in the case of *Euborellia stali* (Dohrn). In the case of *Forficula auricularia* it is said to be about 16 days (4). The young ones are white in colour, and there is no structural difference between the young and the adult except in size. The active newly hatched young cluster round the mother sometimes sitting on her back. If one of her young tends to stray the mother seizes it in her mandibles and restores it to the family circle. The mothers' solicitude for her brood lasts for nearly 3 days after hatching, then she leaves them to fend for themselves. I have not as yet been able to determine the number of moults passed through before a young becomes an adult.

Enemies.—At night, when the earwigs came to the surface of the soil in the jar, they were attacked by lizards and cockroaches; and I actually found a lizard eating a large number of my captives. Cockroaches usually attack the smaller ones. Ants sometimes invade the jars in large numbers and do considerable damage. Some of my earwigs were also infected with ticks. The ticks are ectoparasites, and many may be found adhering to the body of a single earwig. The whole metabolism of the victim is affected and it usually dies after two or three days of infection.

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2. *Fauna of British India—Dermaptera*, by Malcolm Burr.
3. *Studies in Indian Dermaptera*, by Morgan Hebard.
4. *Ent. News*, vol. xxxvi—1926, 8 months study of earwigs by Milton.